



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/919,917

08/02/2001

Loic Brunel

211922US2

3990

22850

7590

07/24/2006

C. IRVIN MCCLELLAND
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

KUMAR, PANKAJ

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed have been fully considered but they are not persuasive.
2. On page 12 of applicant's argument, applicant argues that Wagstaff does not teach attenuation as recited in applicant's specification equation 2 page 6 since Wagstaff only works on r_i . This is not persuasive since applicant has not claimed the equation.
3. On pages 12-13 of applicant's argument, applicant argues that applicant is estimating signal attenuation already undergone along a path while Wagstaff's signal attenuation is based on a magnitude of excess phase rotation. This is not persuasive. While Wagstaff's signal attenuation is based on a magnitude of excess phase rotation, this attenuation is due to what the signal has already undergone along the path. The magnitude of excess phase rotation is due to what the signal has already undergone along the path. The signal phase rotation occurs while the signal is going along the path.
4. Applicant argues on page 13 that using examiner's rationale, the processor in Wagstaff would estimate the attenuation before applying the attenuation to the signal. This is not persuasive since the examiner did not say this and the applicant has provided no basis for this statement.
5. Applicant argues on pages 13-14 that there is no basis for the office indicating Wagstaff teaching "estimating attenuation from the phase rotation" since Wagstaff teaches "attenuates noise and clutter signals, based on the magnitude of excess phase rotation angle". This is not persuasive. It is clear from this line that Wagstaff "attenuates ... based on ... the phase rotation ...". Since Wagstaff has some input, Wagstaff is estimating the input. Wagstaff does not

Art Unit: 2611

definitively know what the actual input was; accordingly since Wagstaff received an input, Wagstaff estimated that input. It is not a probability that Wagstaff “may” receive an input. It is clear in Wagstaff, that Wagstaff is clearly receiving an input.

6. Contrary to applicant’s assertion, the office did not make a subjective conclusion.

7. As per Stein, applicant argues that Stein’s teaching of “said arriving information signal arrives from said first direction when said first comparing means determines the magnitude of the attenuation information signal to be greater than said first threshold value” does not equate to estimating an attenuation undergone by the signal along the at least one path from estimated values of the angle of arrival. This is not persuasive since Stein’s teaching of “signal arrives from said first direction”, equates to signal arriving at an angle and Stein’s teaching of “determining the magnitude of the attenuation” equates to estimate an attenuation. Similar to what was explained above with Wagstaff, since Stein has some input, Stein is estimating the input. Stein does not definitively know what the actual input was; accordingly since Stein received an input, Stein estimated that input. It is not a probability that Stein “may” receive an input. It is clear in Stein, that Stein is clearly receiving an input.

8. Applicant argues on pages 15-16 that since there are only two inputs in Stein, Stein does not teach angle or arrival. This is not persuasive since the angle of arrival is measured by the ratio of the amount of input in one input and the amount of input in the other input. Applicant himself says on page 17 “The essential purpose of Stein is to determine the source direction ...”. The angle of arrival is the direction of the source. Applicant himself says on page 16 “Stein ... determine a direction of arrival of the primary signal”.

Art Unit: 2611

9. Applicant argues on page 16 that applicant does not voluntarily attenuate a signal and implies that Stein voluntarily attenuates the signal. This is not persuasive since when a signal flows through a propagation channel, as it does in both applicant's system and Stein's system, the signal is involuntarily attenuated.

10. Applicant argues on page 16 that the attenuation in Stein is predetermined and not calculated. This is not persuasive. Although Stein does predetermine some attenuation, Stein does not and nor can it predetermine all attenuations. Some of the attenuations in Stein have to be calculated. As explained above, when a signal flows through a propagation channel, as it does in both applicant's system and Stein's system, the signal is involuntarily attenuated which Stein calculates. Stein abstract says, "the attenuation to information signals received from the first direction is greater than the attenuation to signals received from the second direction".

11. Applicant argues on page 17 that "The essential purpose of Stein is to determine the source direction (not to estimate attenuation)". This is not persuasive. The office agrees that Stein does determine the source direction. But Stein attenuates based on the source direction.

12. Applicant argues on page 17 that Stein cannot be reversed since it would lead to a non-working device. This is not persuasive since the office did not intend to argue to completely reverse Stein. Instead, the argument was that if, *arguendo*, Stein is predetermining attenuation based on source direction, Stein is attenuating based on source direction. Thus, put in a reverse way, based on source direction, there is attenuation. A particular direction has a particular attenuation. Also Stein is not only predetermining attenuation based on source direction. Stein also has signal attenuating as the signal flows through the propagation channel.

Art Unit: 2611

13. Applicant argues on page 18 that the references cannot be combined since the examiner did not show reasons that when a skilled artisan confronted with the same problem would select the elements cited from the prior art references for combination in the manner cited. This is not persuasive since the examiner stated in the action that:

a. Kochiyama suggests amplifying is based on the output signal that is received and collected (Kochiyama claims 4 and 5) and thus it needs to know the attenuation in order to know how much to amplify (something broad) in general and Wagstaff suggests the beneficial use of estimating attenuation from the phase rotation such as to attenuate noise and clutter signals (Wagstaff col. 6 line 31) in the analogous art of communication.

b. Kochiyama suggests amplifying is based on the output signal that is received and collected (Kochiyama claims 4 and 5) and thus it needs to know the attenuation in order to know how much to amplify (something broad) in general and Stein suggests the beneficial use of estimating attenuation from the angle of arrival such as to determine which direction the signal is coming from (Stein col. 2 lines 39-42) in the analogous art of communication.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2611

15. Claims 15, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kochiyama USPN 5,400,036 in view of Wagstaff USPN 6,356,510 and Stein USPN 4,714,802. Here is how the references teach the claims:

16. As per claim 15: Method of estimating the channel and the direction of arrival of a signal transmitted by a transmitter and received by an array of antennae after being propagated along at least one path (Kochiyama fig. 1: receivers 1, 2, 3, 4 receiving the transmitted signal P), comprising for each path:

17. a first step of estimating for each antenna in the array of antennae a total phase difference from a signal received by each antenna (Kochiyama col. 5 lines 12-14: phase difference by each of the antennas is used later) (Kochiyama fig. 1: the phase difference from one antenna to the other is the total phase difference which provides the total phase rotation)

18. a second step of estimating the angle of arrival (θ) of the signal (Kochiyama col. 5 lines 14-15: the phase difference is used for calculating target direction angle) as well as the phase rotation ($1z$) undergone by the signal along the at least one path using each of the antennae total phase differences determined in the first step; (Kochiyama fig. 1: the phase difference from one antenna to the other is the total phase rotation) and

~~19.~~ a third step of estimating the attenuation (a) undergone by the signal along the said path from the estimated values (θ , $0j$) of the phase rotation and the angle of arrival (not in Kochiyama but would be obvious as explained below).

20. What Kochiyama does not teach is estimating the attenuation undergone by the signal along the said path from the estimated values of the phase rotation. What Wagstaff 6356510 teaches is estimating the attenuation undergone by the signal along the said path from the

Art Unit: 2611

estimated values of the phase rotation (Wagstaff col. 6 lines 30-34). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the estimating the attenuation undergone by the signal along the said path from the estimated values of the phase rotation as recited by the instant claims, because the combined teaching of Kochiyama with Wagstaff suggest estimating the attenuation undergone by the signal along the said path from the estimated values of the phase rotation as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Kochiyama with Wagstaff because Kochiyama suggests amplifying is based on the output signal that is received and collected (Kochiyama claims 4 and 5) and thus it needs to know the attenuation in order to know how much to amplify (something broad) in general and Wagstaff suggests the beneficial use of estimating attenuation from the phase rotation such as to attenuate noise and clutter signals (Wagstaff col. 6 line 31) in the analogous art of communication.

21. What Kochiyama does not teach is estimating the attenuation from the angle of arrival. Stein 4714802 teaches estimating attenuation from the angle of arrival (Stein col. 8 line 66 to col. 9 line 1). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the estimating the attenuation from the angle of arrival as recited by the instant claims, because the combined teaching of Kochiyama with Stein suggest estimating the attenuation from the angle of arrival as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Kochiyama with Stein because Kochiyama suggests amplifying is based on the output signal that is received and collected (Kochiyama claims 4 and 5) and thus it needs to know the attenuation

Art Unit: 2611

in order to know how much to amplify (something broad) in general and Stein suggests the beneficial use of estimating attenuation from the angle of arrival such as to determine which direction the signal is coming from (Stein col. 2 lines 39-42) in the analogous art of communication.

22. Various limitations in the preamble, such as channel and propagated, recite the intended use of a structure and the body of claim does not depend on such limitations for completeness and the bodily limitations are able to stand alone of such limitations. Thus, such limitations in the preamble are not accorded patentable weight as the bodily limitations do not require such limitations as channel or propagated.

23. As per claim 24, the rejection of claim 15 applies.

Allowable Subject Matter

24. Claims 16-23, 25-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

26. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2611

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

28. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

29. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Pankaj Kumar
Primary Examiner
Art Unit 2611

PK